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(11) AU-B-63698/80

|                   |                     |           |           |               |
|-------------------|---------------------|-----------|-----------|---------------|
| (54)              | INSECT SCREEN       |           |           |               |
| (75)              | BRUCE ARTHUR MORGAN |           |           |               |
| (21)              | 63698/80            | 527915    |           | (22) 24.10.79 |
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| (56)              | 63618/80            | 513146    | E06B 9/52 |               |
|                   | 3162/36             | 100524    | 78.71     |               |
|                   | 1369/31             |           | 78.71     |               |

(57) Claim 1. An insect screen for windows comprising at least one strip of air pervious flexible material, arranged to be secured between the periphery of the window sash and the periphery of the adjacent portion of the window frame, the strip including corrugations or pleats and being extendable to allow the window to be opened whilst filling the gap between the window sash and the frame.

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Forms 1, 2, 4 and 5

AUSTRALIA

Patents Act 1952



INSTRUCTIONS

Insert full name(s) of applicant(s).

CONVENTION OR NON-CONVENTION APPLICATION FOR A PATENT OR PATENT OF ADDITION

63698/80

I/WE(a) BRUCE ARTHUR MORGAN

COMPLETE AFTER PROVISIONAL SPECIFICATION No. 63698/80

Insert full address(es) of applicant(s). (NOT P.O. Box number)

of(b) 41 Dixon Street, Malvern, Victoria, Australia

APPLICATION ACCEPTED AND AMENDMENT

ALLOWED

6/1/83

Delete whatever is inapplicable.

hereby apply for the grant of a (c) patent/~~patent of addition~~ for an invention entitled

Insert title of invention.

(d) "COMBINATION LOCK AND STAY"

which is described in the accompanying (c) provisional/~~complete~~ specification.

Delete entirely if inapplicable.

I/We request that the patent may be granted as a patent of addition to

(c) the patent applied for on application No. patent No.

in the name of

(e)

I/We request that the term of the patent of addition be the same as that of the patent for the main invention or so much of the term of the patent for the main invention as is unexpired.

This application is a Convention application and is based on the following application or applications for a patent or patents or similar protection made in the following country or countries on the following date or dates:—

Delete entirely if convention priority NOT claimed.  
Insert number of first basic application.  
Insert country in which first basic application was made.  
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(f)

No. (g) in (h) on (i) 19  
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My/Our address for service is care of CLEMENT HACK & CO., Patent Attorneys, 140 William Street, Melbourne, Victoria, 3000, Australia.

Insert date

(j) Dated this 30th day of January 1980.

Signatures of applicant(s) if a company, to be executed in a manner binding on the Company according to its Articles of Association or the laws

(k) BRUCE ARTHUR MORGAN

CLEMENT HACK & CO.

*[Handwritten signature]*

AUSTRALIAPatents Act 1952DECLARATION IN SUPPORT OF A CONVENTION OR NON-CONVENTION  
APPLICATION FOR A PATENT OR PATENT OF ADDITIONof  
nt(s)In support of the application made by  
**63698/80**  
**BRUCE ARTHUR MORGAN**for a patent for an invention entitled  
**"INSECT SCREEN"**and  
(es)  
on(s)I/~~was~~ **BRUCE ARTHUR MORGAN** of **41 Dixon Street, Malvern,**  
**Victoria, Australia**

tion

do solemnly and sincerely declare as follows:-

1. I am/~~was~~ the applicant(s) for the patent,~~xxx~~  
~~any other person who has been named as applicant~~  
~~xxx~~
2. ~~The basic application(s) as defined by Section 141~~  
of the Act was/were made in the following country  
or countries on the following date(s) by the  
following applicant(s) namely:-

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3. ~~The said basic application(s) was/were the first~~  
~~application(s) made in a Convention country in respect~~  
~~of the invention the subject of the application.~~
4. The actual inventor(s) of the said invention is/~~was~~  
**BRUCE ARTHUR MORGAN** of **41 Dixon Street,**  
**Malvern, Victoria, Australia**
5. ~~The facts upon which the applicant(s) is/are entitled~~  
to make this application are as follows:-

DECLARED at Melbourne this 22<sup>nd</sup> day of October 19 79B Morgan

527915

PATENTS ACT, 1952

Form 10

# COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE

Short Title:

Int. Cl:

63698/80

Application Number:  
Lodged:

Complete Specification—Lodged:  
Accepted:  
Lapsed:  
Published:

Priority:

Related Art:

Form 10

Contains the  
complete specification  
and is correct for printing.

LODGE  
24 OCT 1980  
PATENT OFFICE

LODGED AT SUB-OFFICE  
24 OCT 1980  
Melbourne

Name of Applicant: **TO BE COMPLETED BY APPLICANT**  
BRUCE ARTHUR MORGAN

Address of Applicant: 41 Dixon Street,  
Malvern,  
Victoria, Australia.

Actual Inventor: **THE APPLICANT**

Address for Service: CLEMENT HACK & CO.,  
140 William Street,  
Melbourne, Vic. 3000.  
Australia.

Complete Specification for the invention entitled:  
"INSECT SCREENS"

The following statement is a full description of this invention, including the best method of performing it known to me:—

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This invention relates to improvements relating to screens for use with awning, casement or double hung horizontal or vertical sliding window assemblies.

In tropical and sub-tropical countries where insects are particularly prevalent there has always existed the problem of how to provide ventilation through a window whilst at the same time preventing the entry of insects. The most usual method employed for preventing entry of insects to a house or dwelling comprises the use of screens of gauze or mesh material which completely fills the aperture defined by the window or door frame. However, these screens are both bulky and unsightly and in certain cases such as in awning windows, require the addition of complicated and comparatively expensive mechanisms to enable an individual to open or close the window.

It is an object of the present invention to provide an improved type of insect screen.

According to one aspect of the present invention, there is provided an insect screen for windows comprising at least one strip of air pervious flexible material arranged to be secured between the periphery of the window sash and the periphery of the adjacent portion of the window frame, the strip including corrugations or pleats so that the strip is extendable to allow the window to be opened whilst filling the gap between the window sash and the frame.

The bellows or pleats preferably concertina to an open position and fold to produce a neat strip-like appearance when the window is closed. Each longitudinal edge of the strip is preferably secured to a trim, the trim being arranged to be secured to the window sash or window frame. The strip may be plastics mesh or gauze. Alternatively, the strip may be constructed of thin metal mesh or gauze. Alternatively a plurality of spaced apertures are provided in an opaque impervious strip of plastic material, each aperture being covered by a fine mesh to allow passage of air therethrough.

In a preferred embodiment the strips comprise woven polyester impregnated with PVA and heat pressure to form permanent pleating.

The strips are manufactured in continuous lengths which can be cut to suit the length of each side of the window, the lengths being joined at the corner.

The trims may be secured to the window sash and window frame by means of conventional fasteners. Alternatively, the trims may be adhesively secured to the window sash and window frame. The trim may also be arranged to support a catch plate which in use is arranged to engage the catch on the window sash to hold the window in a closed position.

The present invention will now be described by way of example only with reference to the accompanying drawings, in which:-

Figure 1 is a perspective view of an awning window assembly with the window in the open position;

Figure 2 is a cross-sectional view of the window assembly in the closed position,

5 Figure 3 is a plan view of the assembly shown in figure 2 split to show the window in an open and closed position, and

Figure 4 is a perspective view of a lock/stay assembly attached to an awning window. As shown in  
10 figure 1 to 3 of the accompanying drawings a timber or aluminium awning window assembly comprises a window frame 10 of rectangular cross-section arranged to locate a window sash 11 which is pivotally secured to the frame 10 at the upper edge 12 thereof, the  
15 window sash being arranged to pivot open as shown in figure 1 about its upper edge 12.

An insect screen 13 comprises three multi-folded strips of plastics mesh or gauze 14, 15 and 16 arranged to line the vertical sides of the sash 14 and 16 and  
20 the horizontal base of the sash 15. The strips, 14, 15 and 16 are corrugated or pleated in cross-section as shown in figure 1 so that the bellows can unfold outwardly as the window is opened (figure 1). Opposed longitudinal edges 18 and 19 of the strips are secured  
25 respectively to trim members 20 and 21. The trim member 20 is made of plastic material and is arranged to be secured by adhesives or other fasteners such as screws to the inside of the frame of the sash 11.

The trim member 21 is provided with two outwardly extending flanges 22 and 23, the flange 23 being arranged to be secured against the window frame 10. The upstanding flange 22 defines a recess 24 into which the folds or pleats 25 of the strip may be compressed when the window is closed as shown in the left hand side of figure 3.

The strips are preferably joined or taped at the bottom corners 27 and 28 of the window assembly and can be cut to length to suit any particular window configuration. The flexible strips 14 are preferably constructed of woven polyester impregnated with PVC. The corrugations or pleats being permanently formed by a heat pressing operation at 150°C. The preferred polyester fabric has 6/6 threads /cm and is 550 D tex. The material is in the form of mesh or gauze sufficiently fine to prevent entry of an insect. Alternatively, the strip material may be cut from a length of folded metal gauze or mesh. In a further form the strip can be extruded in opaque lengths of plastics with a plurality of spaced apertures therein to allow passage of air. The apertures may be covered by a fine gauze or mesh to prevent entry of insects.

With the insect screen extending around three quarters of the periphery of the window sash, the conventional latching mechanism which is normally positioned at the base of the horizontally extending portion 30 of the sash frame is, as shown in figure 2, moved upwardly of the portion 30 and is provided with

a downwardly extending latch 31 which is arranged to abut against an angled clip 32 which extends over the trim 21 and is secured to the centre of the ledge 35 of the window frame.

The present invention relates to an improved insect screen for use on casement or awning windows and can be manufactured for sale either as a complete window assembly or alternatively as a kit of parts for assembly to existing awning or casement windows. The assembly is also applicable for use on horizontally or vertically sliding windows. Although the preferred embodiment described above refers to the insect screen in the form of three strips of flexible material which are joined in use at the bottom corners of the sash frame, it is understood that the strips could be in two L-shaped sections which may be cut to length to fit the rectangular corners of the frame, the strips being joined at the middle of the sill at the abutting ends of the L-shapes. In this example each L-shape strip is provided with reversed pleating at the corners to achieve the change in direction of the pleating at the apices.

Alternatively, the operator, when fitting the strips, could adhesively secure the ends of two strips together to form the L-shaped member for fitting into the corner of the window frame and sash.

The trim members are preferably made in a variety of colours to suit particular usages.

The bellows cross-section of the insect screen allows the casement or awning sash to be opened to about 12 inches or to an angle of about 20°. Since both types of windows are designed to be fully opened, a safety strap or other safety device is desirable to ensure that the insect screen is not damaged by over-opening the window. A safety strap could be simply fitted to the window frame and attached to the sash to limit the angular movement of the sash relative to the frame. The bellows cross-section also allows the screen to assume the configuration of the varying window aperture whilst being in itself uniform in cross-section.

An important advantage of the insect screen of the present invention, is that the screen is virtually invisible when the window is closed, because the bellows arrangement is concealed behind the trim which as shown in figure 3 constitutes a very small part of the cross-section of the window frame. Furthermore, at all times the glass of the window is not covered by the insect screen and visibility through the glass is never impaired. Since the screen is designed to only cover the small gap between an open window and the frame, far less mesh or gauze material is required and therefore the cost of the assembly should not be excessive. Existing insect screens have to be designed for a particular window size whilst, in the present invention, the flexible strip can be cut to length to suit any particular

application. The insect screen of the present invention is particularly useful for do-it-yourself kits to be fitted to existing window assemblies.

5 Because existing insect screens cover the whole cross-sectional surface of the window, it is difficult to obtain accessibility to the window catches to enable the window to be opened or closed. For this reason, it is usual to incorporate complicated screw-threaded drive rods or chain mechanisms which can be  
10 actuated from the inside of the room through lever means to cause the window to be opened or closed. The mechanisms are not only inefficient and prone to rust and other deterioration, but substantially increase the cost of the window assembly without particularly  
15 enhancing the visual appearance.

In contrast, with the present invention a simple and aesthetically pleasing catch may be provided on the sash and which is accessible without the need for lever mechanisms.

20 As a further example, a stay assembly, illustrated in figure 4 may be provided for use particularly with an awning window. However, it is understood that the stay assembly could also be used with a casement window.

25 Figure 4 is a perspective view of part of a window assembly comprising a sill 50, and a rectangular awning sash 51 hinged at the top about a horizontal axis. Because the window sash is hinged about a horizontal axis from the top of the window, the window

has to be opened outwardly against its gravity and therefore a stay has to be incorporated to hold the window in the open position.

5 A stay assembly 60 comprises a thin rectangular strip 61 of polypropylene or polyurethane secured at one end 62 to the base of the window sash 51 via a mounting flange 63 and fasteners 64. The other end of the polypropylene strip is arranged to be wrapped around a vertically extending column  
10 formed integrally and centrally on a annular flange assembly 66 which is in turn secured to the window still 50 by suitable fasteners. The mounting flange and column assembly are preferably moulded of plastics material and the column has its upper end externally threaded  
15 to accommodate an internally threaded spigot formed centrally in a plastic cap member 68. The cap member 68 is provided with an annular horizontally extending bearing surface 69 which can be moved into engagement with the adjacent surface 70 of the mounting  
20 flange 66 by screwing the spigot down on to the upstanding column.

25 The inner end of the strip 61 may be attached to the upstanding column 65, or alternatively, may be simply wrapped around the column, so that as the window is opened the strip uncoils to allow the sash to open to a pre-determined acute angle relative to the vertical axis and as the sash is closed, the polypropylene is sufficiently strong to cause the strip to recoil around the column to assume a neat and unobtrusive



coil within the cap member. To lock the member in the fully opened, partially opened or closed position, the cap member 68 can be screwed down on to the column to cause the annular flange 69 to clamp the adjacent portion of the strip 61 against the flange assembly 66.

In a further embodiment (not shown) the stay and locking mechanism may be in the form of a metal horizontally extending pantograph positioned between the window sill and sash. A spring loaded push button friction release may be incorporated to allow relative movement of the arms of the pantograph to facilitate opening and closing of the window. The friction release would also operate to hold the window sash in a range of opened positions. This pantograph mechanism has an additional advantage that it is positioned below the strip of flexible material to act as a support against undue sagging of the material when the window is open.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. An insect screen for windows comprising at least one strip of air pervious flexible material, arranged to be secured between the periphery of the window sash and the periphery of the adjacent portion of the window frame, the strip including corrugations or pleats and being extendable to allow the window to be opened whilst filling the gap between the window sash and the frame.
2. An insect screen according to claim 1 wherein the corrugations or pleats unfold to an open position and concertina or fold to produce a neat strip-like appearance when the window is closed.
3. An insect screen according to either claim 1 or claim 2 wherein each longitudinal edge of the strip is secured to a trim, the trim being arranged to be secured to the window sash or window frame.
4. An insect screen according to any one of the preceding claims wherein the strip is plastics, mesh or gauze.
5. An insect screen according to any one of the preceding claims wherein the strip comprises a mesh and woven polyester impregnated with PVC.
6. An insect screen according to claim 5 wherein the mesh is heat pressed to form permanent pleating.
7. An insect screen according to any one of claims 1 to 4 wherein the strip is an extruded length of opaque and air impervious plastics, having a plurality of spaced apart apertures, each aperture being covered by a fine mesh to allow passage of air therethrough.

8. An insect screen according to any one of the preceding claims wherein the screen is constituted by two L-shaped strips of material, the feet of the L's being joined together so that the strip can fill the gap between the window sash and the frame.

9. A window assembly comprising a window sash and a window frame, the sash being either pivotable or slidable relative to the frame to define, when open, an aperture through the window assembly, and an insect screen as claimed in any one of the preceding claims secured between the periphery of the window sash and the periphery of the adjacent portion of the window frame to fill the gap between the window sash and the window frame.

10. A window assembly according to claim 9 wherein latching means is attached between the window sash and window frame to effect opening and closing of the window and to hold the window in the open, partially open, and closed positions.

11. An insect screen substantially as described herein with reference to and illustrated in the accompanying drawings.

DATED THIS 24th day of October, 1980.

BRUCE ARTHUR MORGAN  
By His Patent Attorneys

CLEMENT HACK & CO.  
Fellows Institute of Patent  
Attorneys of Australia.

63698 /50

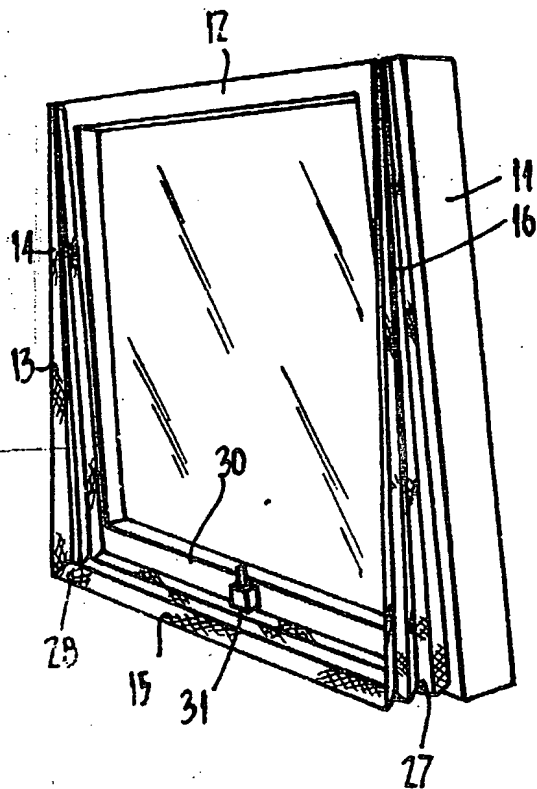


FIG. 1.

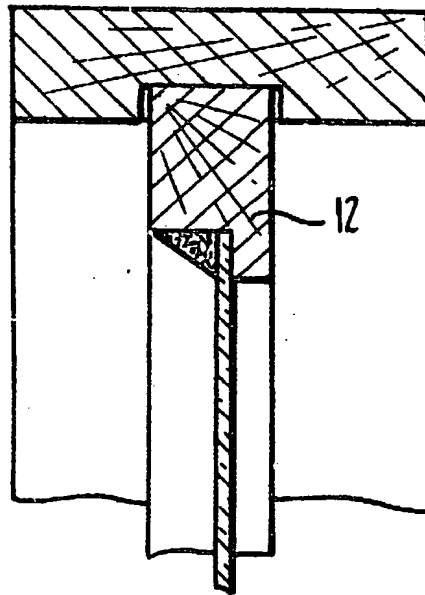
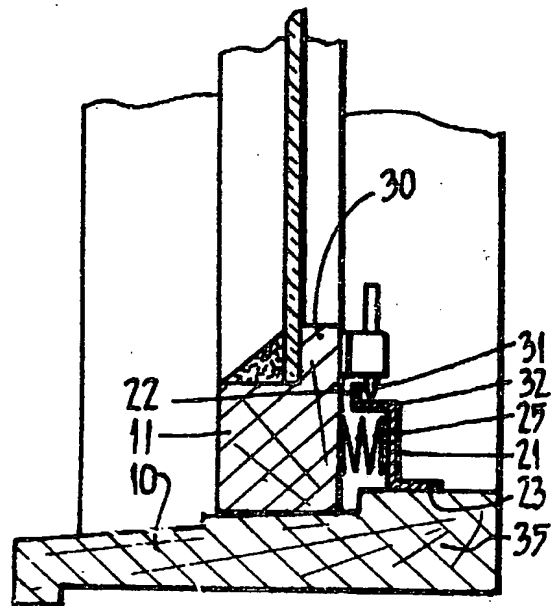


FIG. 2.



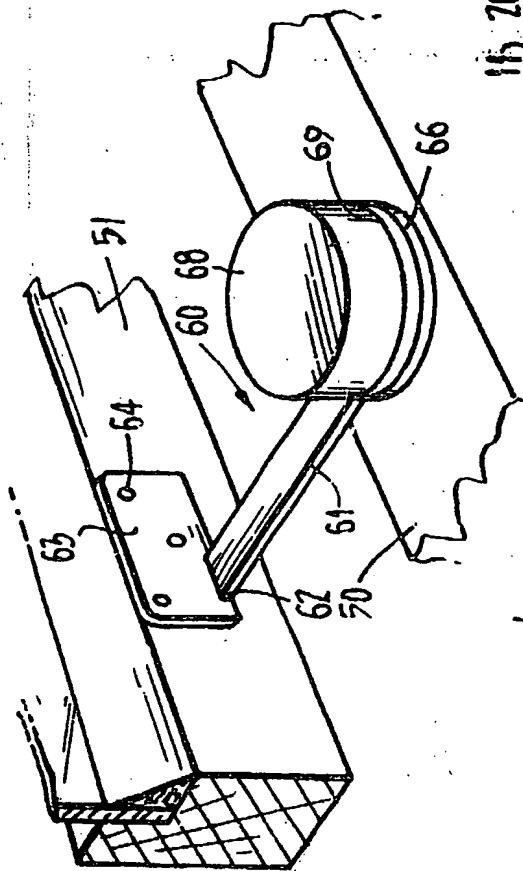


Fig. 4.

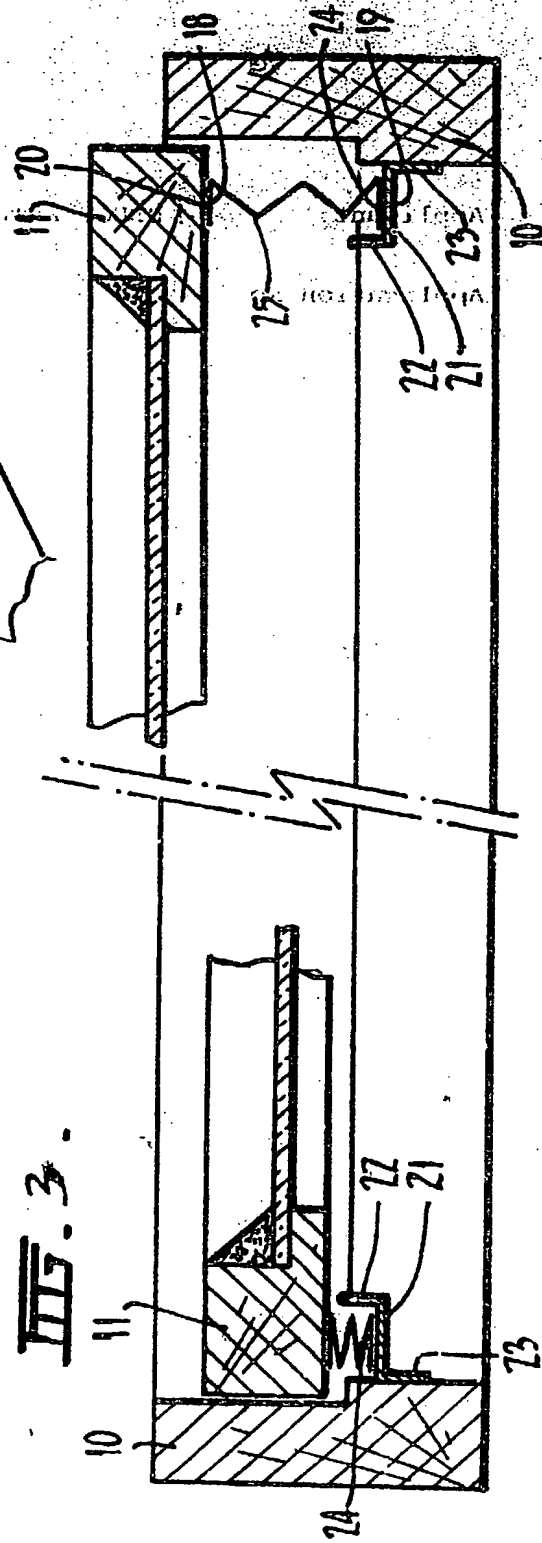


Fig. 3.

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